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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/666,952	09/17/2003	Won-Joon Choi	ATHEP128	7062
21912	7590	10/24/2006	EXAMINER	
VAN PELT, YI & JAMES LLP			EJAZ, NAHEED	
10050 N. FOOTHILL BLVD #200				
CUPERTINO, CA 95014			ART UNIT	PAPER NUMBER
			2611	

DATE MAILED: 10/24/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

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<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/666,952	CHOI ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Naheed Ejaz	2611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on 17 September 2003.
- 2a) This action is FINAL.                  2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 1-27 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) Claim(s) \_\_\_\_\_ is/are allowed.
- 6) Claim(s) 1-27 is/are rejected.
- 7) Claim(s) \_\_\_\_\_ is/are objected to.
- 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) All    b) Some \* c) None of:
1. Certified copies of the priority documents have been received.
  2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## DETAILED ACTION

### ***Abstract***

1. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

2. Abstract is objected to because it should be within the range of 50 to 150 words and delete the title from Abstract.

### ***Claim Objections***

3. Claim 6 is objected to because of the following informalities: it is not clear if 'a/g' (line 2) refer to "a or g" or "a and g". Replace 'IEEE 802.11 a/g' by ---IEEE 802.11 standard a and IEEE 802.11 standard g---. Appropriate correction is required.

4. Claim 13 is objected to because of the following informalities: it is not clear if 'a/g' (line 2) refer to "a or g" or "a and g". Replace 'IEEE 802.11 a/g standard' by ---IEEE 802.11 standard a and IEEE 802.11 standard g---. Appropriate correction is required.

### ***Claim Rejections - 35 USC § 102***

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 1, 5, 7, 21-23 are rejected under 35 U.S.C. 102(b) as being anticipated by Felix et al. (5,946,356) (hereinafter, Felix).

7. Regarding claim 1, Felix teaches, 'receiving convolutionally encoded data; and enhancing the transmission of the data by further repetition encoding the data' (see figure 2, elements 212, 214 & 215, col.5, lines 16-27).

8. With respect to claim 5, Felix teaches, 'masking a data by applying a pseudorandom sequence' (figure 2, element 'PN Generator').

9. As per claim 7, Felix discloses, 'the data is interleaved after repetition encoding whereby a need to pad the data prior to interleaving is reduced' (figure 2, element 216, col.5, lines 27-50).

10. Refer to claim 21, Felix teaches, 'a convolutional encoder configured to convolutionally encode data' (figure 2, element 212, col.5, lines 16-25), 'a repetition encoder configured to enhance the transmission of the convolutionally encoded data by further repetition encoding the data' (figure 2, element 220, col.5, lines 51-63).

11. Regarding claim 22, Felix discloses, 'an interleaver' (figure 2, element 216).

12. Refer to claim 23, Felix teaches, 'a masking processor configured to superimpose a pseudorandom mask on the repetition coded data' (figure 2, element 'PN generator', col.5, lines 64-67, col.6, lines 1-16).

13. Claims 21 is also rejected under 35 U.S.C. 102(b) as being anticipated by Pauls (5,983,382).

Art Unit: 2611

14. Refer to claim 21 Pauls discloses, "a convolutional encoder configured to convolutionally encode data' (figure1, element 12) & (figure 3, element 50), 'a repetition encoder configured to enhance the transmission of the convolutionally encoded data by further repetition encoding the data' (figure 1, element 16).

***Claim Rejections - 35 USC § 103***

15. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

16. Claims 2-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Felix et al. (5,946,356), as applied to claim 1 above, and in view of Rezvani et al. (6,976,202) (hereinafter, Rezvani).

17. Regarding claims 2 & 3, Felix teaches all the limitations in the previous claim on which claims 2 & 3 depend but he fails to disclose frequency and time domain.

Rezvani teaches a system used in a wireless communication system which has encoders in frequency and time domains circuitry (figure 4A, elements 402 & 406).

It would have been obvious to one of ordinary skill in the art, at the time of invention, to implement the teachings of Rezvani into Felix in order to improve the system integrity without re-transmission of data corrupted or lost in the communication medium as taught by Rezvani (col.3, lines 40-47).

18. Refer to claim 4, Felix teaches all the limitations in the previous claim on which claim 4 depends but he fails to disclose reduction in peak to average ratio.

Rezvani teaches reduction in peak to average ratio (figure 6A, col.11, lines 34-43).

It would have been obvious to one of ordinary skill in the art, at the time of invention, to implement the teachings of Rezvani into Felix in order to improve the system integrity without re-transmission of data corrupted or lost in the communication medium as taught by Rezvani (col.3, lines 40-47).

19. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Felix et al. (5,946,356), as applied to claim 1 above, and in view of Venkatesh et al. (2004/0240486) (hereinafter, Venkatesh).

20. Refer to claim 6, Felix teaches all the limitations in the previous claim on which claim 6 depends but he fails to disclose IEEE 802.11.

Venkatesh teaches, 'data is encoded using an IEEE 802.11 a/g encoder' (page # 1, paragraphs # 0001 & 0002).

It would have been obvious to one of the ordinary skill in the art, at the time of invention, to implement the teachings of Venkatesh into Felix in order to have the wireless communication systems which are compatible with the IEEE 802.11 protocols as taught by Venkatesh (paragraphs # 0001 & 0007).

21. Claims 8, 9, 24-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pauls (5,983,382) and in view of Yoshida (5,953,377).

22. Claim 8 is rejected under the same rationale as mentioned in the rejection of claim 24.

23. Claim 9 is rejected under the same rationale as mentioned in the rejection of claim 26.

24. Refer to claim 24, Pauls teaches, 'a receiver configured to receive convolutionally encoded and repetition encoded data', 'a decoder configured to decode the combined data' (figure 2, col.5, lines 56-67, col.6, lines 1-11).

Pauls does not disclose combiner.

Yoshida teaches, 'a data combiner configured to combine the repetition encoded data to produce combined data' (figure 12, element 95).

It would have been obvious to one of the ordinary skill in the art, at the time of invention, to implement the teachings of Yoshida into Pauls in order to form two transmission channels having different bit error rates by using the combiner in the circuit thus increase the coding gain while flexibly adapting to the format of the transmission information as taught by Yoshida (col.12, lines 8-21).

25. Regarding claim 25, Pauls discloses, 'a deinterleaver configured to deinterleave the combined data' (figure 2, element 34).

26. As per claim 26, Pauls teaches, 'a Viterbi decoder' (figure 4, element 118).

27. Claims 10, 11, 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pauls (5,983,382) in view of Yoshida (5,953,377), as applied to claims 8 & 24 above, and further in view of Rezvani et al. (6,976,202) (hereinafter, Rezvani).

28. Regarding claims 10 & 11, Pauls and Yoshida teach all the limitations in the previous claims on which claims 10 & 11 depend but they fail to disclose frequency and time domain.

Rezvani teaches a system used in a wireless communication system which has encoders in frequency and time domains circuitry (figure 4A, elements 402 & 406).

It would have been obvious to one of ordinary skill in the art, at the time of invention, to implement the teachings of Rezvani into Pauls and Yoshida in order to improve the system integrity without re-transmission of data corrupted or lost in the communication medium as taught by Rezvani (col.3, lines 40-47).

29. Refer to claim 15, Pauls and Yoshida teach all the limitations in the previous claim on which claim 15 depends but they fail to disclose compensation for the effect of subchannel.

Rezvani teaches encoding of data in order to compensate the effect of interference on the subchannels in frequency domain (col.1, lines 62-67, col.2, lines 1-9 & 23-32) which reads on claim limitations of 'combining the repetition encoded data to produce combined data includes compensating for the effect of each subchannel'.

It would have been obvious to one of ordinary skill in the art, at the time of invention, to implement the teachings of Rezvani into Pauls and Yoshida in order to separate data from noise in a received signal as taught by Rezvani (col.1, lines 67, col.2, lines 1-7) thus increase system reliability.

30. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Pauls (5,983,382) in view of Yoshida (5,953,377), as applied to claims 8 & 24 above, and further in view of Venkatesh et al. (2004/0240486) (hereinafter, Venkatesh).

31. Refer to claim 13, Pauls and Yoshida teach all the limitations in the previous claim on which claim 13 depends but they fail to disclose IEEE 802.11.

Venkatesh teaches, 'encoding conforms to the IEEE 802.11 a/g standard' (page # 1, paragraphs # 0001 & 0002).

It would have been obvious to one of the ordinary skill in the art, at the time of invention, to implement the teachings of Venkatesh into Pauls and Yoshida in order to have the wireless communication systems which are compatible with the IEEE 802.11 protocols as taught by Venkatesh (paragraphs # 0001 & 0007).

32. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Pauls (5,983,382) in view of Yoshida (5,953,377), as applied to claims 8 & 24 above, and further in view of Bruckert et al. (5,822,359) (hereinafter, Bruckert).

Refer to claim 14, Pauls and Yoshida teach all the limitations in the previous claim on which claim 14 depends but they fail to disclose deinterleaving before combining the data.

Bruckert teaches, 'deinterleaving the data before combining the data' (figure 1, elements 162 & 166, col.9, lines 64-67, col.10, lines 1-4 & lines 17-30).

It would have been obvious to one of the ordinary skill in the art, at the time of invention, to implement the teachings of Bruckert into Pauls and Yoshida in order to combine the input data samples into a composite stream of coherently detected data samples as taught by Bruckert (col.9, lines 40-44) thus increase system performance.

33. Claims 16 & 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pauls (5,983,382) in view of Yoshida (5,953,377), as applied to claims 8 & 24 above, and further in view of Anim-Appiah et al. (2004/0100898) (hereinafter, Appiah).

34. Regarding claims 16 & 17, Pauls and Yoshida teach all the limitations in the previous claim on which claims 16 & 17 depend but they fail to disclose weighting data for different subchannels and channel quality estimation.

Appiah sums the gain estimates for each subchannel having data which are being used to calculate the channel quality metric for the subchannels (figure 1, element 134, figure 2, element 216, paragraph # 0035) (claimed 'weighting data received on different subchannels according to the quality of the subchannels'). Furthermore, Appiah calculates the channel quality metric M (paragraph # 0034, page # 3, equation 3) for each sub-channel which includes noise-plus-interference power Pni and formula to calculate Pni includes long sequence binary phase keyed symbol (page # 5, equation 2, paragraphs # 0036 & 0040) (claimed 'aggregate channel quality estimation is made for bits') & Appiah is recovering the data sequence by using the Viterbi algorithm (page # 4, paragraph # 0034) (claimed 'Viterbi to determine a maximum likely transmitted data sequence').

It would have been obvious to one of the ordinary skill in the art, at the time of invention, to implement the teachings of Appiah into Pauls and Yoshida in order to provide timely estimates of channel quality by calculating channel quality metric thus increase the reliability for channel assessment for wireless communications as taught by Appiah (paragraph # 0021).

35. Claims 18 & 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pauls (5,983,382) in view of Yoshida (5,953,377), as applied to claims 8 & 24 above, and further in view of Zehavi et al. (6,148,042) (hereinafter, Zehavi).

36. Refer to claims 18 & 19, Pauls and Yoshida teach all the limitations in the previous claim on which claims 18 & 19 depend but they fail to disclose determinations of phase offset and hard decision.

Zehavi determines a phase offset in order to minimize the processing associated with projection and scaling of the decision data (figure 2, figure 5, elements 111, 112 & 116, col.6, lines 5-29). Moreover, he calculates the coherent hard index values in order to increase the accuracy for generating the reference signals for determining the phase offset (figure 5, elements 112, 116, 118 & 130, col.6, lines 50-61) which reads on claims limitations of 'estimating a phase offset using the received repetition encoded data by making a hard decision and determining a hard decision corrected signal'.

It would have been obvious to one of the ordinary skill in the art, at the time of invention, to implement the teachings of Zehavi into Pauls and Yoshida in order to increase the accuracy of the received signal as taught by Zehavi (col.6, line s57-61) thus enhance system reliability.

37. Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Pauls (5,983,382) in views of Yoshida (5,953,377) and Zehavi et al. (6,148,042), as applied to claims 8, 18, 19 & 24 above, and further in view of Wishchermann (5, 148, 278).

38. Regarding claim 20, in addition to aforementioned rejections of claims 18 & 20, Pauls, Yoshida and Zehavi teach all the limitations in the previous claim on which claim 20 depends but they fail to disclose median filter.

Wishchermann discloses median filter (col.6, lines 39-55).

Art Unit: 2611

It would have been obvious to one of the ordinary skill in the art, at the time of invention, to implement the teachings of Wishchermann into Pauls and Yoshida in order to self-adapt the signal and find the output value in the collection of similar input values as taught by Wishchermann (col.6, lines 39-55).

39. Claims 12 & 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pauls (5,983,382) in views of Yoshida (5,953,377) & Zehavi et al. (6,148,042), as applied to claims 19 & 24 above, and further in view of Takeda et al. (2001/0034871) (hereinafter, Takeda).

40. Regarding to claims 12 & 27, in addition to aforementioned rejection of claim 19, Pauls, Yoshida & Zehavi teach all the limitations in the previous claim on which claim 27 depends but they fail to disclose mask remover.

Takeda teaches, 'mask remover' (paragraphs # 0089 & 0138) (it is noted that Takeda is removing the mask symbols from a Reed-Muller code and also reads on claim 12 limitations as well because Reed-Muller code could be replaced by pseudorandom codes).

It would have been obvious to one of the ordinary skill in the art, at the time of invention, to implement the teachings of Takeda into Pauls, Yoshida & Zehavi in order to increase the minimum Euclidean distance without lowering the transmission rate by adding mask symbols while transmitting the data and removing the mask symbols while decoding them as taught by Takeda (paragraphs # 0003 & 0089).

***Contact Information***

41. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Naheed Ejaz whose telephone number is 571-272-5947. The examiner can normally be reached on Monday - Friday 8:00 - 4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chieh Fan can be reached on 571-272-3042. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Naheed Ejaz  
Examiner  
Art Unit 2611

10/20/2006

  
PANKAJ KUMAR  
PRIMARY PATENT EXAMINER